



Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 10133 (1982): Glass bottles-dimensional relationships
and tolerances [CHD 10: Glassware]

“ज्ञान से एक नये भारत का निर्माण”

Satyanaaranay Gangaram Pitroda

Invent a New India Using Knowledge



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartṛhari—Nītiśatakam

“Knowledge is such a treasure which cannot be stolen”



BLANK PAGE



PROTECTED BY COPYRIGHT

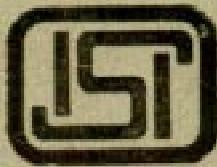
RE-AFFIRMED 1992

IS : 10133 - 1982

Indian Standard

SPECIFICATION FOR GLASS BOTTLES — DIMENSIONAL RELATIONSHIPS AND TOLERANCES

UDC 621·798·147 : 666·171 : 006·78 + 621·753·1



© Copyright 1982

INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHAJUR SHAH ZAFAR MARG
NEW DELHI 110002

Indian Standard

SPECIFICATION FOR GLASS BOTTLES — DIMENSIONAL RELATIONSHIPS AND TOLERANCES

Glass Containers Sectional Committee, MCPD 13

Chairman

SHRI C. K. SOMANY

Representing

Hindustan National Glass & Industries Ltd,
Calcutta

Members

SHRI N. C. JAIN (*Alternate to*
Shri C. K. Somany)

Alembic Glass Industries Ltd, Vadodara

SHRI C. G. AMIN

SHRI R. P. PATEL (*Alternate*)

Directorate General of Technical Development,
New Delhi

SHRI N. G. BASAK

SHRI I. K. KAPOOR (*Alternate*)

Directorate of Food (Ministry of Agriculture),
New Delhi

SHRI M. BHATIA

SHRI A. S. DESAI (*Alternate*)

The Pharmaceutical & Allied Manufacturer's
Distributors Association Ltd, Bombay

SHRI J. G. BHATT

Central Committee for Food Standards (Directorate
General of Health Services), New Delhi

SMT DEBI MUKHERJEE (*Alternate*)

National Dairy Development Board, Anand

DR B. K. CHAKRABORTY

Directorate of Weights & Measures (Ministry of
Commerce & Civil Supplies), New Delhi

SHRI S. CHANDRASEKHARAN

DEPUTY DIRECTOR (W&M) (*Alternate*)

Ministry of Finance (Department of Revenue &
Insurance)

CHIEF CHEMIST

DEPUTY CHIEF CHEMIST (*Alternate*)

All India Food Preservers' Association (Regd),
New Delhi

SHRI DAYA NAND

SHRI O. P. DANG (*Alternate*)

Directorate of Drugs Control Administration,
Ahmadabad

SHRI J. P. GANATRA

SHRI J. G. TRIVEDI (*Alternate*)

JG Glass Industries Ltd, Pimpri

SHRI R. S. GROVER

SHRI S. K. GUPTA (*Alternate*)

(Continued on page 2)

© Copyright 1982

INDIAN STANDARDS INSTITUTION

This publication is protected under the *Indian Copyright Act* (XIV of 1957) and reproduction in whole or in part by any means except with written permission of the publisher shall be deemed to be an infringement of copyright under the said Act.

(Continued from page 1)

<i>Members</i>	<i>Representing</i>
SHRI J. K. KHOSLA	Metal Box India Ltd, Calcutta
SHRI N. SREERAMULU (<i>Alternate</i>)	
SHRI M. S. KOHLI	Kissan Products Ltd, Bangalore
SHRI S. V. DRAVID (<i>Alternate</i>)	
SHRI S. V. KRISHNASWAMY	Wimco Ltd, Bombay
SHRI J. MUKERJI	Central Glass and Ceramic Research Institute, Calcutta
DR K. P. SRIVASTAVA (<i>Alternate</i>)	
SHRI K. H. PARikh	Vazir Glass Works Ltd, Bombay
SHRI S. D. MARKETKAR (<i>Alternate</i>)	
SHRI B. K. RAMCHANDANI	The Mahalakshmi Glass Works Pvt Ltd, Bombay
SHRI K. M. SAMTANI (<i>Alternate</i>)	
SHRI B. B. Roy	Pfizer Limited, Bombay
SHRI B. N. THAKORE (<i>Alternate</i>)	
SHRI A. K. SEN GUPTA	Indian Institute of Packaging, Bombay
SHRI L. N. GOSWAMI (<i>Alternate</i>)	
SHRI L. K. SHAH	Herbertsons Ltd, Bombay
SHRI M. S. PARikh (<i>Alternate</i>)	
SHRI N. D. SHETTY	All India Glass Manufacturer's Federation, New Delhi
SHRI O. P. SRIVASTAVA	Ministry of Defence, New Delhi
SHRI S. N. DINGER (<i>Alternate</i>)	
SHRI H. K. UPADHYAYA	Larsen & Toubro Ltd, Bombay
SHRI P. S. DAS, Director (MCPD)	Director General, ISI (<i>Ex-officio Member</i>)

Secretary

SHRI A. R. GULATI
Deputy Director (MCPD), ISI

Indian Standard

SPECIFICATION FOR GLASS BOTTLES — DIMENSIONAL RELATIONSHIPS AND TOLERANCES

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 26 February 1982, after the draft finalized by the Glass Containers Sectional Committee had been approved by the Marine, Cargo Movement and Packaging Division Council.

0.2 This standard is based on the French Specification NF H 35-077 Glass Bottles — Dimensional Relationships and Tolerances published by the Association Francaise de Normalisation (AFNOR).

0.3 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers the dimensional relationships and tolerances of round blown glass bottles in terms of their capacity and degree of carbonation.

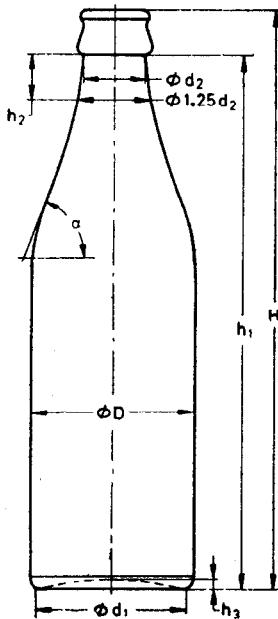
2. DIMENSIONAL RELATIONSHIPS

2.1 The dimensional relationships for carbonated and non-carbonated products bottles shall be as given in Table 1 and Table 2 respectively.

*Rules for rounding off numerical values (*revised*).

**TABLE 1 DIMENSIONAL RELATIONSHIPS OF BOTTLES
FOR CARBONATED PRODUCTS**

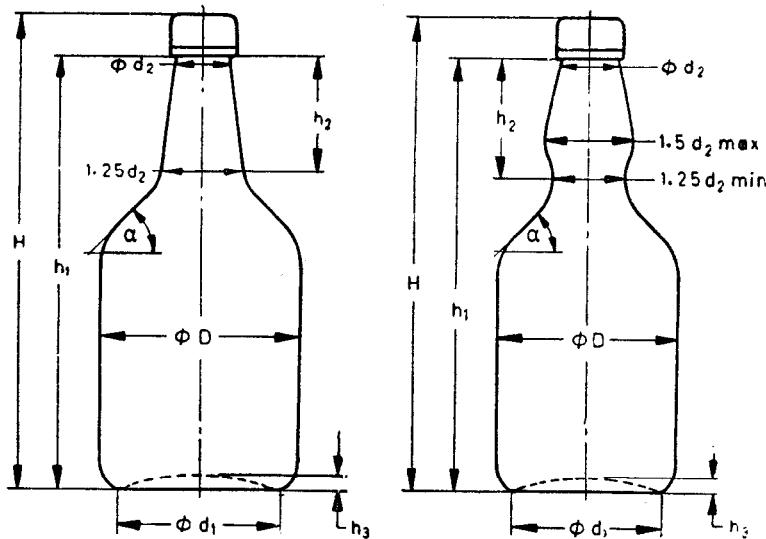
(Clause 2.1)
 (Degree of Carbonation $> 2\text{g of CO}_2/\text{litre}$)



RELATIONSHIP	BRIMFUL CAPACITY	LIMITS	
		ml	
$\frac{W}{V}$ (W — mass in grams and V — capacity in centilitres)	50 to 180 181 to 1 100	9.5 5.6	13.5 11
Height Dia	$\frac{H}{D}$	50 to 1 100	2.2 —
Collar height Neck height	$\frac{h_2}{h_1}$	50 to 1 100	— 0.25
Angle of shoulder α		50 to 1 100	45° —
Stability	$\frac{d_1}{H}$	50 to 1 100	0.22 —
Concavity	$\frac{h_3}{d_1}$	50 to 1 100	— 0.11
Dia d_2		50 to 1 100	— 30 mm

TABLE 2 DIMENSIONAL RELATIONSHIPS OF BOTTLES FOR NON-CARBONATED PRODUCTS

(Clause 2.1)

(Degree of carbonation < 2g of CO₂/litre)

RELATIONSHIP	BRIMFUL CAPACITY ml	LIMITS	
		Min	Max
$\frac{W}{V}$ (W — mass in grams and V — Brimful capacity in centilitres)	50 to 180 181 to 1 900	7.3 4.9	12 9.5
Height Dia	$\frac{H}{D}$	50 to 1 900	2
Collar height Neck height	$\frac{h_2}{h_1}$	50 to 1 900	—
Angle of shoulder α		50 to 1 900	40°
Stability	$\frac{d_1}{H}$	50 to 1 900	0.22
Concavity	$\frac{h_3}{d_1}$	50 to 1 900	—
Dia d_2		50 to 1 900	30 mm

3. TOLERANCES

3.1 Tolerances on Brimful Capacity — Table 3 gives the tolerances on brimful capacity of bottles and shall be checked on the basis of sampling tables given in IS : 2500 (Part I)-1973* with AQL 2·5 percent.

TABLE 3 TOLERANCES ON BRIMFUL CAPACITY OF BOTTLES

NOMINAL CAPACITY ml	TOLERANCE ON BRIMFUL CAPACITY	
	± percent of Nominal Capacity	± ml
50 to 100	—	3
100 „ 200	3	—
201 „ 300	—	6
301 „ 500	2	—
501 „ 1 000	—	10
1 001 „ 5 000	1	—

3.2 Dimensional Tolerances — The dimensional tolerances for height (H), diameter (D), verticality and parallelism of bottom ring shall be as given below:

Tolerance on height

$$T_H = \pm (0.6 + 0.004 H)$$

Tolerance on dia (ovality included)

$$T_D = \pm (0.5 + 0.012D)$$

Tolerance on verticality

$$T_v = 1.5 \text{ mm for } H \leqslant 120 \text{ mm}$$

$$T_v = (0.3 + 0.01 H) \text{ for } H > 120 \text{ mm.}$$

Base Dia, d_1	Parallelism of Bottom Ring
Up to 20	0.45 Max
20 1 „ 30	0.6 Max
30 1 „ 40	0.7 Max
40 1 „ 50	0.8 Max
50 1 „ 60	0.9 Max
60 1 and above	1.0 Max

3.2.1 The individual values of the tolerances resulting from the formulae given in 3.2 shall be rounded to 0·1 mm. The values of D , d_1 and H are given in millimetres.

*Sampling inspection tables : Part I Inspection by attributes and by count of defects (first revision).

3.2.2 The overall height (H) diameter (D) and verticality shall be checked by the method given in Appendix A.

APPENDIX A

(Clause 3.2.2)

TEST FOR HEIGHT AND VERTICALITY OF BOTTLES

A-1. ASSEMBLY

A-1.1 Assembly for the determination of height verticality shall be as shown in Fig. 1.

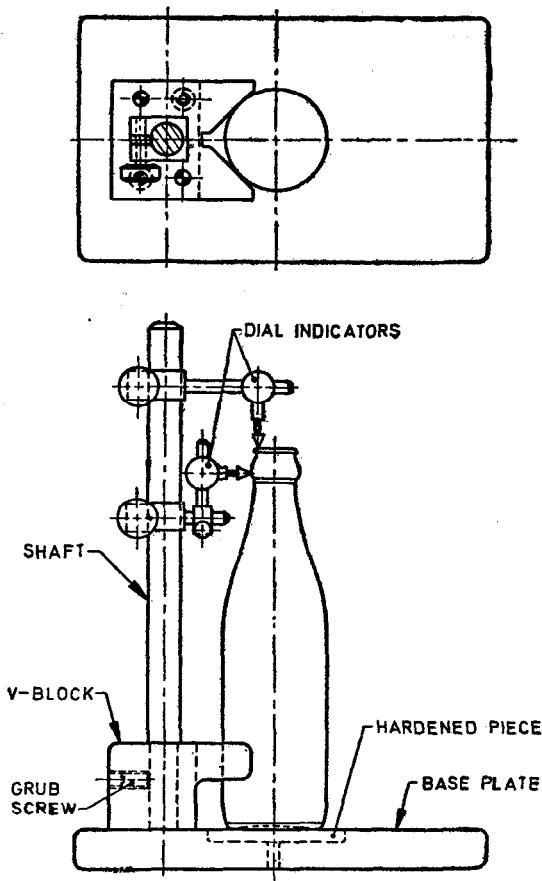


FIG. 1 ASSEMBLY FOR HEIGHT AND VERTICALITY TEST

A-2. PROCEDURE

A-2.1 Fill the bottle with water in order to give it more stability and place it on its base on the flat plate having a shaft bolted to it at right angles. Adjust the V-block mounted on the shaft in such a manner that it is in contact with due outer diameter of the bottle at about the middle. Adjust one of the dial indicator fitted to the shaft so that its measuring point comes in contact with the outer edge of the neck of the bottle and the second on the sealing surface of the bottle for measuring overall height and tolerance of the bottle. Rotate the bottle, keeping the body always in contact with the V-block. Note down the maximum deflection on the indicator.

A-2.1.1 Half of the total deflection shown by the first indicator shall be the variation in verticality.